

The Bachelor of Science degree in Computer Engineering is offered by the University of the Pacific through the Department of Electrical and Computer Engineering (ECPE). Computer engineering is a broad field which encompasses all aspects of computers, including the design and application of both hardware and software. Career opportunities in this field are diverse and are found in manufacturing, transportation, communications, research, education and management. All CpE students must complete a team-oriented, multidisciplinary Senior Design Project, which provides an opportunity to apply engineering fundamentals and design methods to the solution of a real problem. Graduates of this program have the knowledge essential for entry into this dynamic field of engineering or to continue their education through graduate studies.

CpE laboratories include state-of-the-art workstations, as well as standard test and measurement equipment. Students have easy access to all computer and laboratory equipment, and can conduct approved independent research.

COMPUTER ENGINEERING PROGRAM OBJECTIVES

Graduates of the BSCpE degree program will be prepared to build and sustain successful careers in computer engineering, and actively engage in life-long learning.

COOPERATIVE EDUCATION PROGRAM

Co-op coordinators work with students to arrange relevant full-time, paid jobs with engineering employers. 32 units of co-op work experience are required to graduate, although students have the option of pursuing 50 units. (Non-U.S. citizens are exempt from the co-op requirements.) Students who take 32 units of co-op work for a Fall or Spring semester plus one Summer semester. Students who take 50 units of co-op can work for different companies for a total of one year of work experience before they graduate.

GENERAL EDUCATION

Student who enter the Computer Engineering Program as freshmen are required to take Pacific Seminars 1 and 2. Students also take four General Education (G.E.) courses. Two G.E. courses are required from Category I in different areas, and one course must be from Category II-A or II-C. All students take Pacific Seminar 3 and ENGR 30, which is a required G.E. II-B courses. Transfer students should discuss G.E. requirements with their advisor.

For more information contact:

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The Office of Admissions can provide applications and general information about the University.
Phone (209) 946-2211 or www.pacific.edu/admission

Transfer students are welcome to inquire about entering the program at any level.

Bachelor of Science in Computer Engineering – Program Curriculum

Mathematics and Basic Science

MATH 051 [4] Calculus I
 MATH 053 [4] Calculus II
 MATH 055 [4] Calculus III
 MATH 057 [4] Differential Equations
 PHYS 053 [5] Physics I
 PHYS 055 [5] Physics II
 CHEM 025 or 027 [5] Gen Chemistry
 Math elective [3-4] (See list below)

General Education

PACS 001 [4] Pacific Seminar 1
 PACS 002 [4] Pacific Seminar 2
 PACS 003 [3] Pacific Seminar 3
 Gen. Ed. [3-4] (I-A, I-B, or I-C)*
 Gen. Ed. [3-4] (I-A, I-B, or I-C)*
 Gen. Ed. [3-4] (II-A or II-C)
 ENGR 030 [3] Engr., Ethics & Society (II-B)

*Category I Gen. Eds must be from different areas.

Professional Practice (Co-op)

ENGR 181 [18]
 ENGR 182 [14]
 ENGR 183 [18]

32 units of Co-op are required to graduate, although students can opt to take 50 units. Non-U.S. citizens are exempt from Co-op.

Computer Engineering Core

ECPE 005 [1] Intro to Elec & Comp Engr
 ECPE 041 [3] Electric Circuits
 ECPE 041L [1] Electric Circuits Lab
 ECPE 071 [3] Digital Design
 ECPE 071L [1] Digital Design Lab
 ECPE 121 [4] Systems Analysis
 ECPE 127 [3] Random Signals
 ECPE 131 [3] Intro. to Integrated Circuits
 ECPE 131L [1] Intro. to Integrated Circuits Lab
 ECPE 170 [4] Computer Systems and Networks
 ECPE 172 [4] Microcontrollers
 ECPE 173 [4] Computer Organization
 ECPE 174 [4] Advanced Digital Design

ECPE 195 [2] Senior Project 1
 ECPE 196 [2] Senior Project 2
 ENGR 010 [1] Dean's Seminar
 ENGR 025 [1] Prof. Practice Seminar
 COMP 051 [4] Intro to Computer Science
 COMP 053 [4] Data Structures
 COMP 157 [3] Design and Analysis of Algorithms
 Electives (See list below)
 - One ECPE elective [3-4]
 - One COMP elective [3-4]
 - One COMP or ECPE elective [3-4]
 - One Other elective [3-4]

(Minimum Totals: 120 academic units; 32 CO-OP units)

Electives must be selected from the following list and include one from each category. The remaining elective must be taken from COMP or ECPE Electives areas, with a total of three ECPE and COMP courses required. Courses should be selected to form a cohesive study plan.

COMP Elective (at least one)

COMP 101 Application Programming [4]
 COMP 127 Client-Server Systems [4]
 COMP 129 Software Engineering [4]
 COMP 135 Human-Computer Interface [3]
 COMP 137 Distributed Computing [3]
 COMP 141 Programming Languages [3]
 COMP 147 Computing Theory [3]
 COMP 155 Computer Simulation [4]
 COMP 159 Computer Game Technologies [4]
 COMP 161 Introduction to Bioinformatics [4]
 COMP 163 Database Management Sys. [3]
 COMP 173 Operating Systems [3]
 COMP 175 System Admin. and Security [3]
 COMP 191 Independent Study [3-4]*
 COMP 197 Undergraduate Research [3-4]*

ECPE Electives (at least one)

ECPE 125 Intro. To DSP [4]
 ECPE 132 Analog Circuits Design [4]
 ECPE 135 Power Electronics [4]
 ECPE 136 VLSI Design [4]
 ECPE 141 Advanced Circuits [4]
 ECPE 151 Artificial Intelligence [3]
 ECPE 153 Computer Graphics [3]
 ECPE 155 Autonomous Robotics [4]
 ECPE 161 Automatic Control Sys [4]

ECPE 162 Communication Systems [4]
 ECPE 163 Energy Conversion [4]
 ECPE 165 Power Systems [4]
 ECPE 175 Emb. and Real-time Sys. [4]
 ECPE 176 Computer Architecture [3]
 ECPE 177 Computer Networking [4]
 ECPE 178 Network Security [3]
 ECPE 191 Independent Study [3-4]*
 ECPE 197 Undergraduate Research [3-4]*

Other Electives (one)

BIOL 035 Envr: Concepts & Issues [4]
 BIOL 041 Intro. to Biology [4]
 BIOL 051 Principles of Biology [4]
 BIOL 061 Principles of Biology [4]
 BUSI 107 Marketing Management [4]
 BUSI 143 Product Innovation [4]
 CHEM 027 General Chemistry II [5]
 CIVL 130 Fluid Mechanics I [4]
 CIVL 132 Intro. to Environmental Engr. [4]
 EMGT 170 Engr. Administration [4]
 EMGT 172 Engineering Economy [3]
 EMGT 174 Engr. Project Management [3]
 ENGR 020 Engr. Mechanics I [3]
 ENGR 120 Engr. Mechanics II [3]
 ENGR 121 Mechanics of Materials [4]
 ENGR 122 Thermodynamics [3]

GEOS 051 Physical Geology [4]
 GEOS 053 Geol Evolution of the Earth [4]
 GEOS 057 Earth System Science [4]
 MECH 110 Instru. & Exp. Methods [4]
 PHYS 057 Modern Physics [4]
 PHYS 101 Electricity & Magnetism [4]
 PHYS 102 Electrodynamics [4]
 PHYS 105 Optics [4]
 PHYS 127 Computational Physics [4]
 PHYS 141 Astrophysics [4]
 PHYS 151 Advanced Physics Lab. [4]
 PHYS 161 Thermal Physics [4]
 PHYS 170 Solid State Physics [4]
 PHYS 181 Classical Mechanics [4]
 PHYS 183 Quantum Mechanics [4]

Advanced Math Electives (one)

MATH 110 Numerical Analysis [4]
 MATH 145 Applied Linear Algebra [4]
 MATH 152 Applied Analysis [4]
 MATH 157 Applied Diff. Equations II [4]
 MATH 174 Graph Theory [4]

* Independent Study and Undergraduate Research can be taken 1-4 units. A total minimum of 3 or maximum of 4 units can count as an elective.